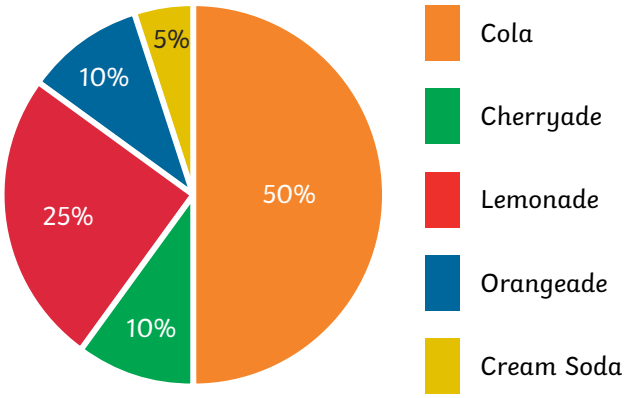
1) a) True
   b) False
   c) False
   d) True
2) a) 75
   b) 60
   c) 105
   d) 55%

1) a) This is incorrect. 110 children chose cheese in year 5 whereas 90 children chose cheese in year 6.
   b) This is correct. 55 children chose tuna in year 5 and only 54 children chose tuna in year 6.
   c) This is correct. 30% chose tuna and salad altogether in year 5 and 30% chose tuna in year 6.
   d) This is incorrect. 17 more children chose chicken in year 5 than in year 6.
2) a) Olivia is incorrect. 25% = $\frac{1}{4}$ therefore Olivia needs to divide 200 by 4 to find her answer.
   b) Jack is incorrect. 10 people chose salt and vinegar as their favourite flavour.
   c) Amena is correct as $\frac{1}{5}$ is equivalent to 20%.
   d) Hamza is incorrect. 40 more children chose cheese and onion than ready salted.

1) 4000 tonnes
2) a) 1200 tonnes
   b) 600 tonnes
   c) 450 tonnes
   d) 540 tonnes
   e) 210 tonnes
3) a) 2018 by 200 tonnes
   b) 2017 by 90 tonnes
   c) 500 tonnes more fabric was recycled in 2018 compared to 2017.
   d) 2550 tonnes
4) Answers will vary.

**1)** 260 children were asked to choose their favourite soft drink. This pie chart shows the results:

**Favourite Soft Drinks**




Decide if the following statements are true or false.

**a)** $\frac{1}{4}$ of the children chose lemonade as their favourite drink. _____

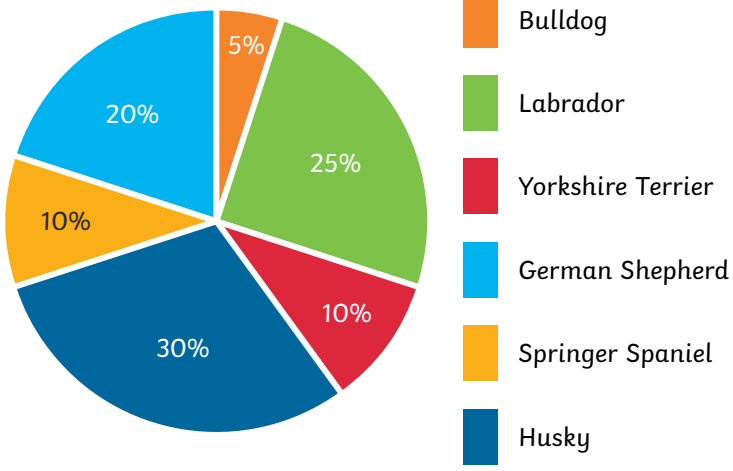
**b)** 140 children chose cola. _____

**c)** 15 more children chose orangeade than cream soda. _____

**d)** 169 children in total chose either cherryade, cream soda or cola as their favourite drink. _____

**2)** 300 people were asked to choose their favourite breed of dog. This pie chart shows the results:

**Favourite Breeds of Dog**




**a)** How many people chose a labrador as their favourite breed of dog? _____

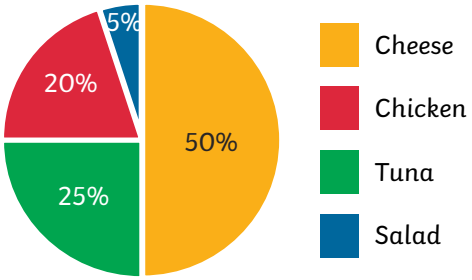
**b)** How many more people chose a husky than a springer spaniel? _____

**c)** How many people in total chose either a Yorkshire terrier, bulldog or German shepherd as their favourite breed of dog? _____

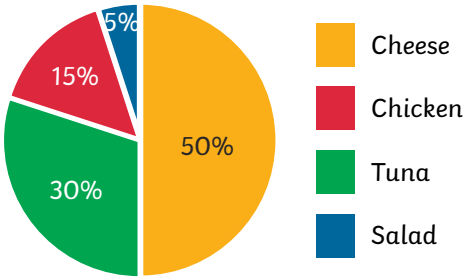
**d)** What percentage of people chose husky and labrador altogether? _____

**1)** 220 year 5 children and 180 year 6 children were asked what their favourite sandwich filling was. The results are shown in these pie charts:

**Favourite Sandwich Filling in Year 5**




**Favourite Sandwich Filling in Year 6**




Explain whether or not you agree with each of these statements about the pie charts, giving reasons.

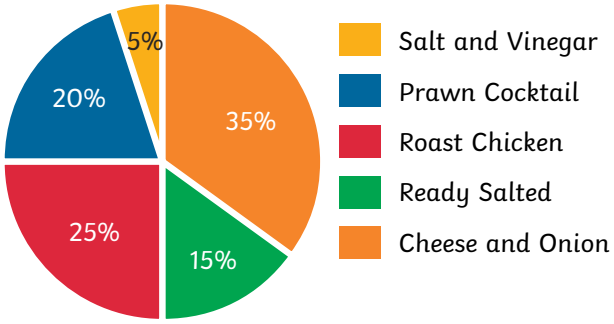
**a)** The same number of children in each year group chose cheese as their favourite sandwich filling.

**b)** More children in year 5 chose tuna than in year 6.

**c)** The same percentage of children in year 5 chose tuna and salad altogether as chose tuna in year 6.

**d)** 18 more children chose chicken in year 5 than year 6.

**2)** 200 people were asked to choose their favourite crisp flavour. The results are shown in this pie chart. Explain whether or not you agree with each child's reasoning about the pie chart.




**a)** Olivia knows that 25% of people chose roast chicken. She thinks that, as 200 ÷ 25 = 8, eight people chose roast chicken.

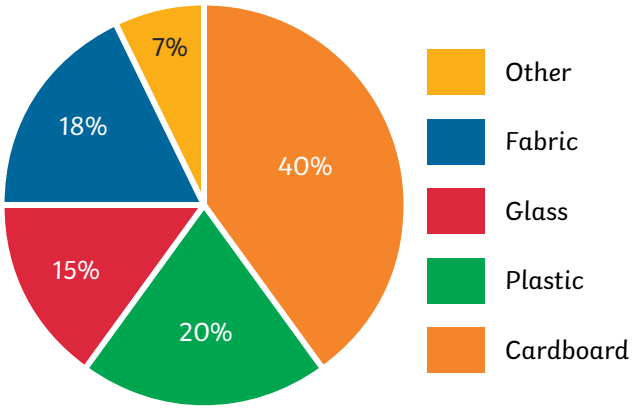
**b)** Jack thinks that 12 people chose salt and vinegar as their favourite crisp flavour.

**c)** Amena thinks that $\frac{1}{5}$ of children chose prawn cocktail as their favourite flavour.

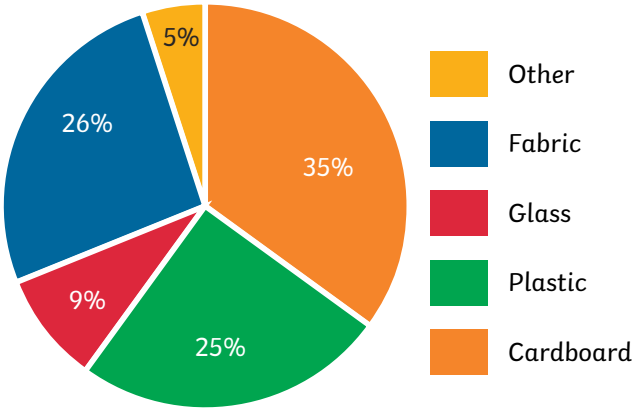
**d)** Hamza thinks that 30 more people chose cheese and onion than ready salted as their favourite flavour.

These pie charts show the different percentages of recycled materials that were collected in two years:

**2017 Recycling**




**2018 Recycling**




**1)** If 200 tonnes of recycling in 2018 was 'other' materials, how many tonnes of recycling were collected in total that year?

_____

**2)** If 3000 tonnes of recycling was collected in total during 2017, calculate the quantities collected of the following materials:

**a)** cardboard _____

**b)** plastic _____

**c)** glass _____

**d)** fabric _____

**e)** other _____

**3)** Compare the two pie charts to answer the following questions.

**a)** In which year was the larger quantity of cardboard collected? By how many tonnes was it larger? _____

**b)** In which year was the larger quantity of glass collected? By how many tonnes was it larger? _____

**c)** Which material saw the greatest difference in the quantity that was collected between the two years? _____

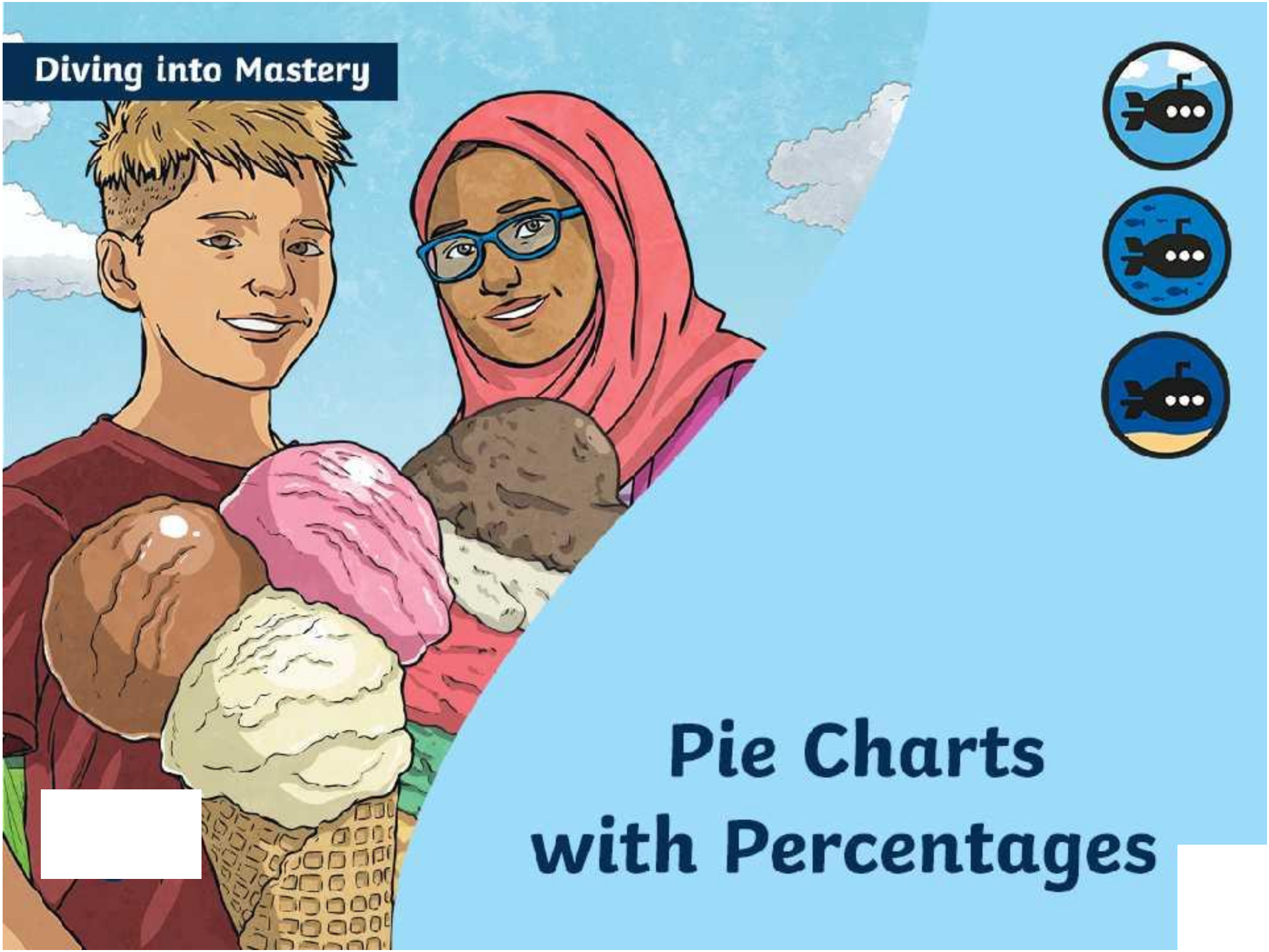
**d)** In 2016, the total quantity of recycling collected was 15% lower than 2017. How many tonnes of recycling was collected in 2016? _____

**4)** Write your own questions comparing the two pie charts.

_____

_____

_____


Diving into Mastery
Pie Charts
with Percentages

# Diving into Mastery Guidance for Educators

Each activity sheet is split into three sections, diving, deeper and deepest, which are represented by the following icons:

Diving

Deeper

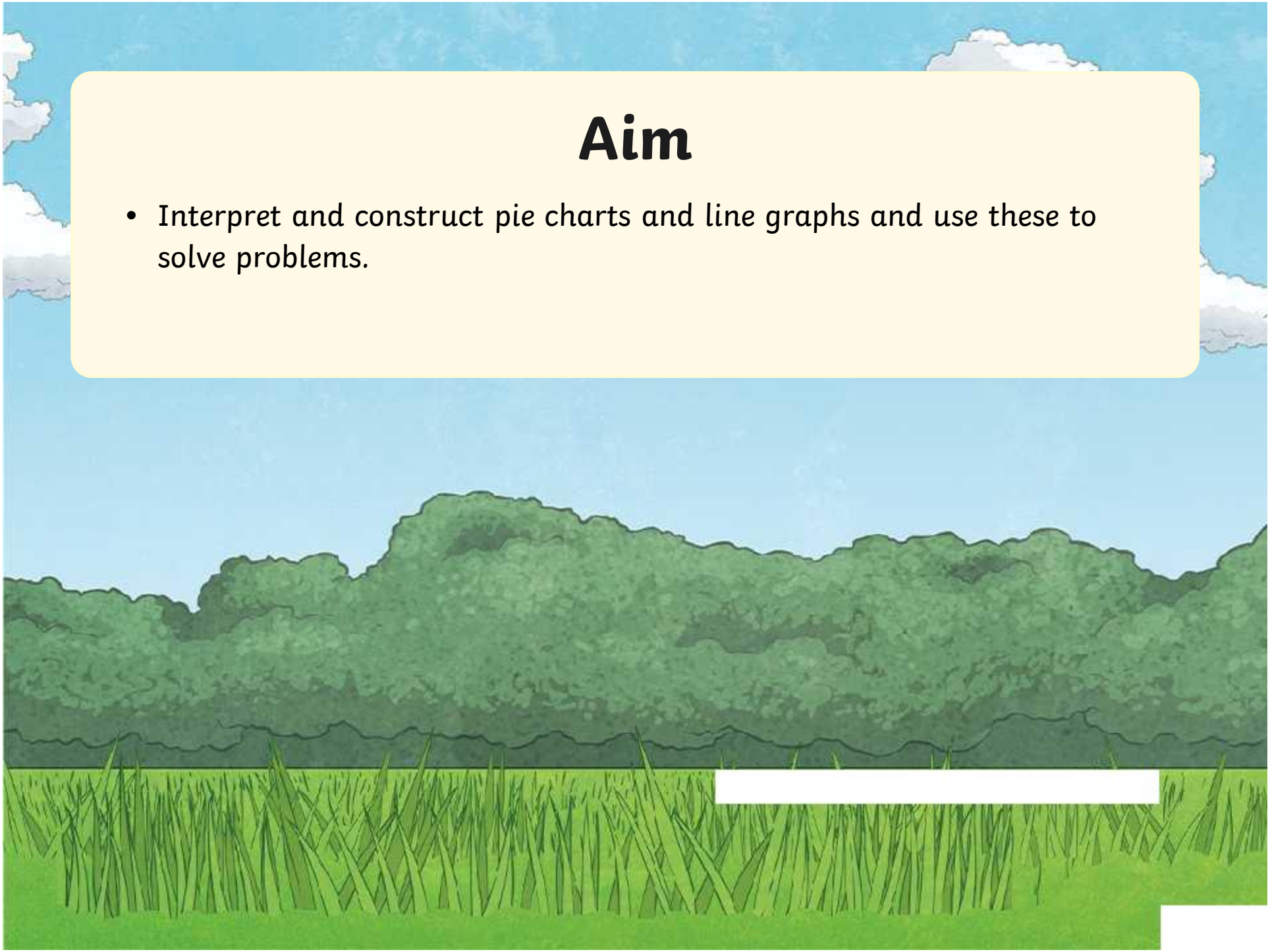
Deepest

These carefully designed activities take your children through a learning journey, initially ensuring they are fluent with the key concept being taught; then applying this to a range of reasoning and problem-solving activities.

These sheets might not necessarily be used in a linear way. Some children might begin at the 'Deeper' section and in fact, others may 'dive straight in' to the 'Deepest' section if they have already mastered the skill and are applying this to show their depth of understanding.

# Aim

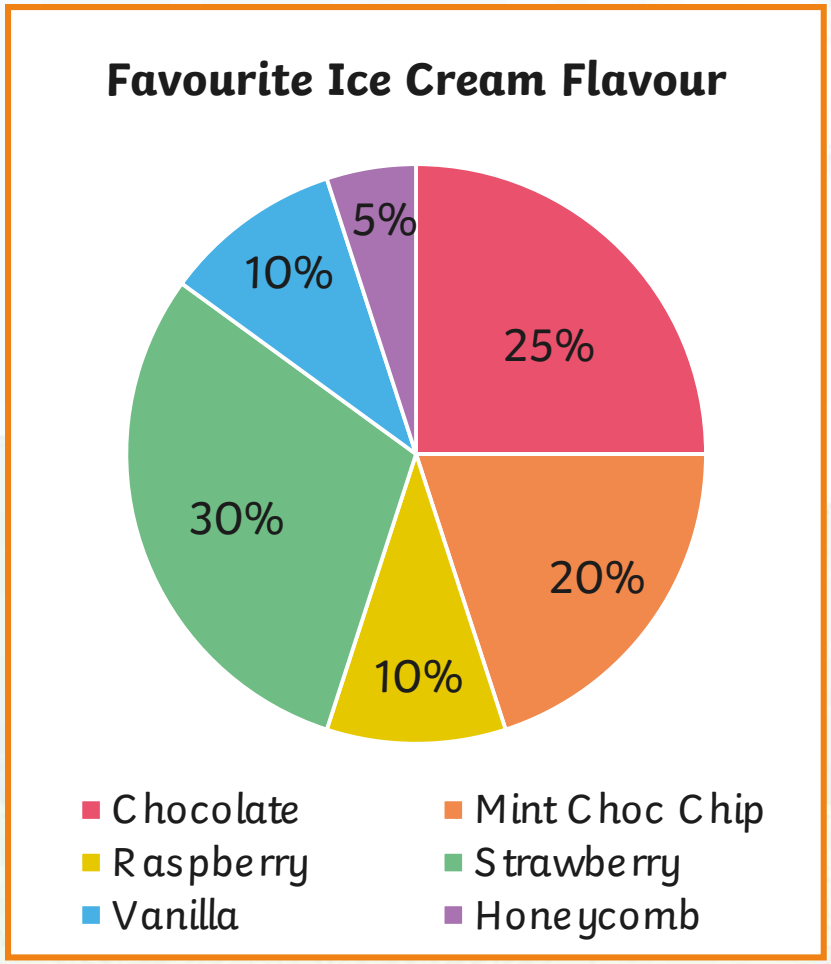
- Interpret and construct pie charts and line graphs and use these to solve problems.



## Pie Charts with Percentages | Diving

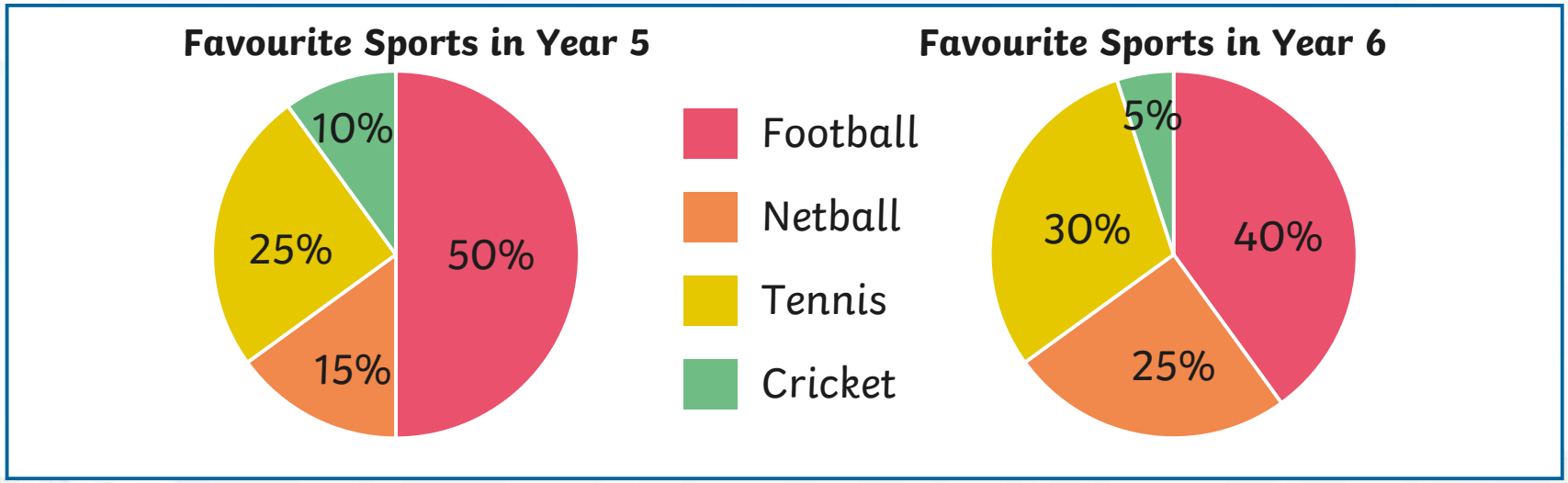
300 children were asked to choose their favourite ice cream flavour.
This pie chart shows the results:

| | |
|---|---|
| How many children chose chocolate as their favourite flavour? | **75** |
| How many more children chose strawberry than raspberry as their favourite flavour? | **60** |
| How many children in total chose either mint choc chip, vanilla or honeycomb as their favourite flavour? | **105** |
| What percentage of children chose raspberry and chocolate altogether? | **35%** |



## Pie Charts with Percentages | Deeper

140 year 5 children and 160 year 6 children were asked to name their favourite sports. The results are shown in these pie charts:

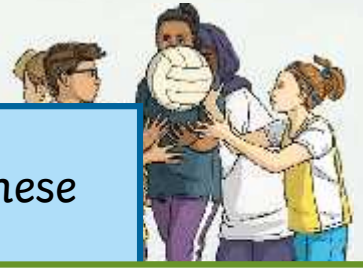



tennis as

10 more children chose football in year 5 than in year 6.

with each of these

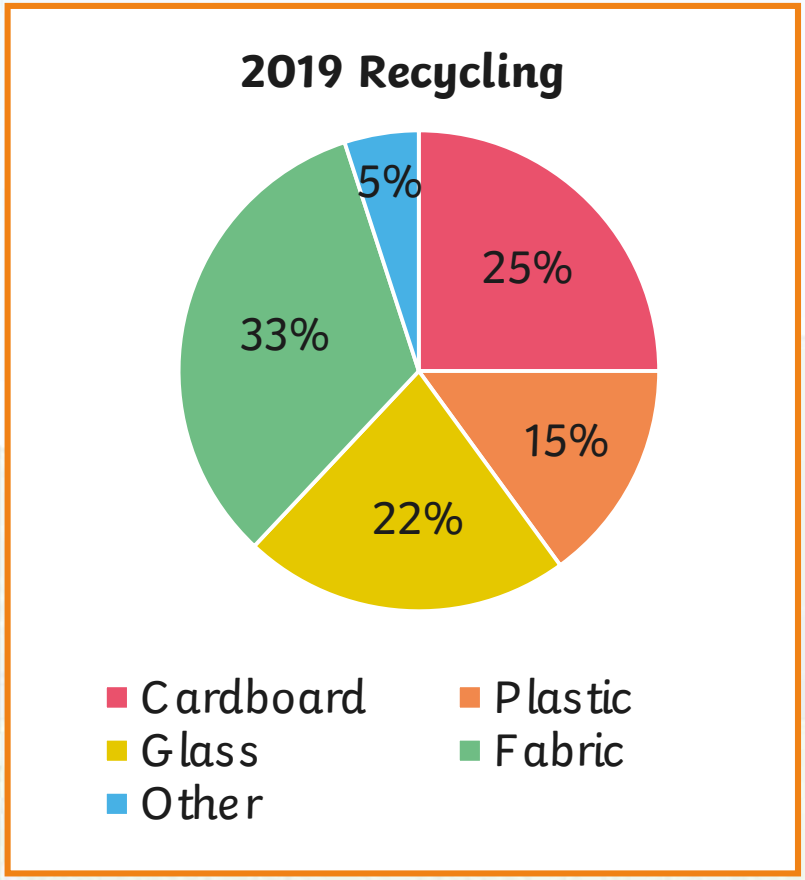
statements about the pie charts, giving reasons.



**This is incorrect. Only 6 more children chose football in year 5 compared to year 6**

## Pie Charts with Percentages | Deepest

This pie chart shows the different percentages of recycled materials that were collected in 2019:




If 250 tonnes of recycling was 'other' materials, how many tonnes of recycling were collected in total during 2019?

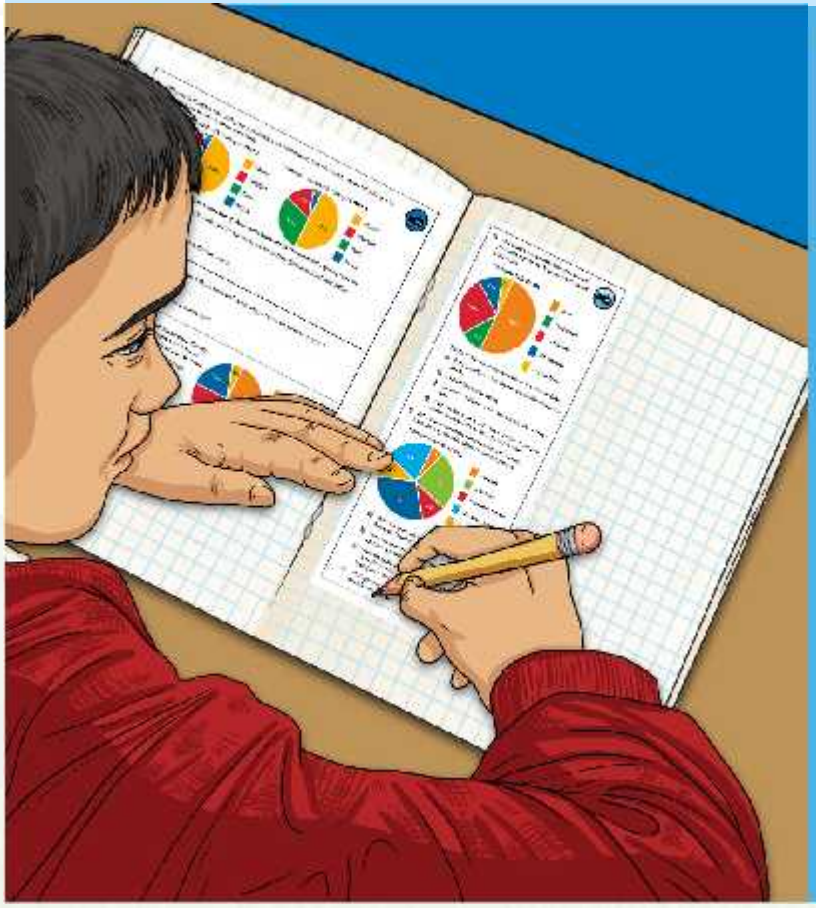
**5000 tonnes**

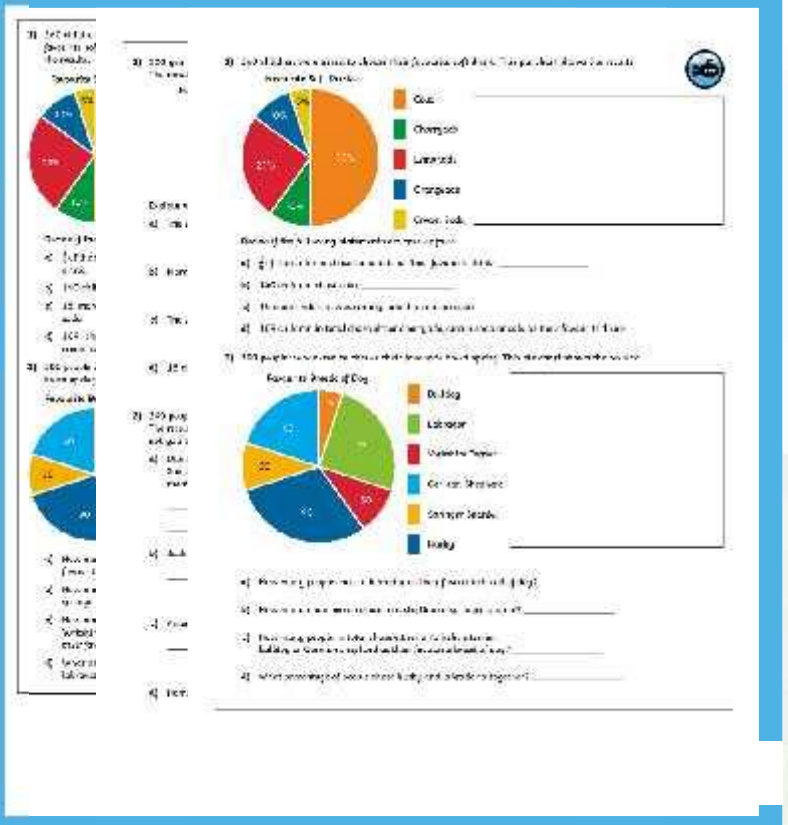
Calculate the quantities collected of the following materials:

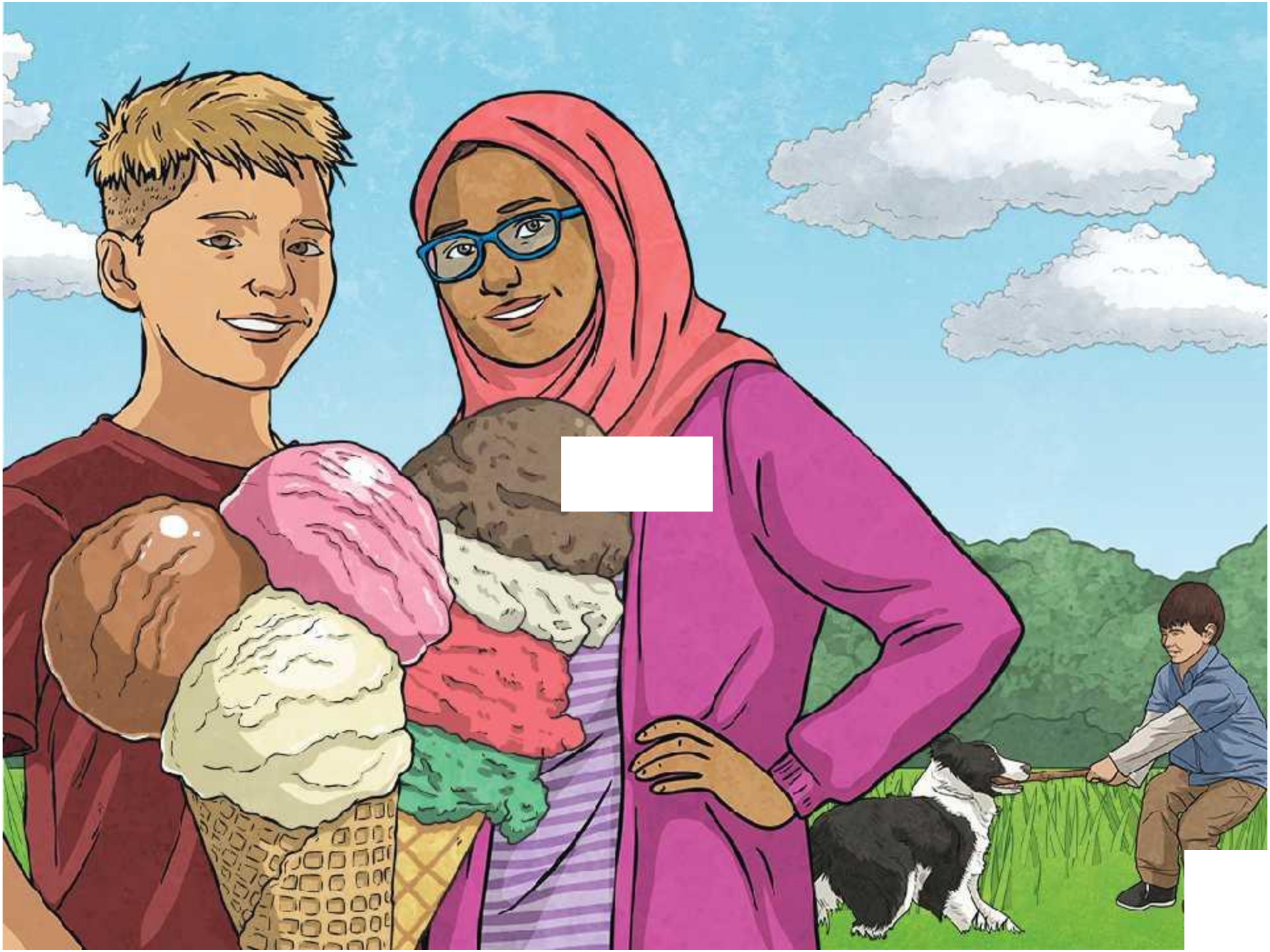
| | |
|---|---|
| cardboard | **1250 tonnes** |
| plastic | **750 tonnes** |
| glass | **1100 tonnes** |
| fabric | **1650 tonnes** |

## Pie Charts with Percentages

Dive in by completing your own activity!

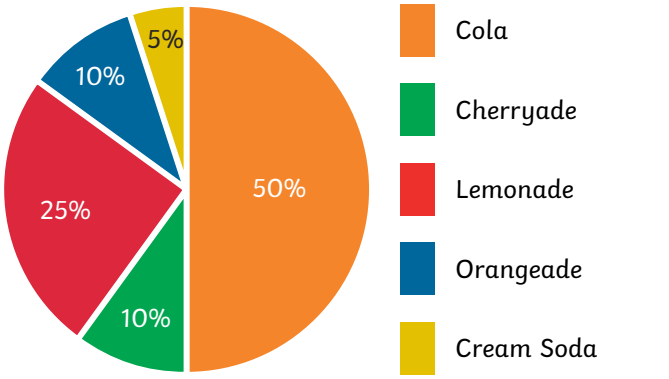






**1)** 260 children were asked to choose their favourite soft drink. This pie chart shows the results:

**Favourite Soft Drinks**




Decide if the following statements are true or false.

**a)** $\frac{1}{4}$ of the children chose lemonade as their favourite drink.

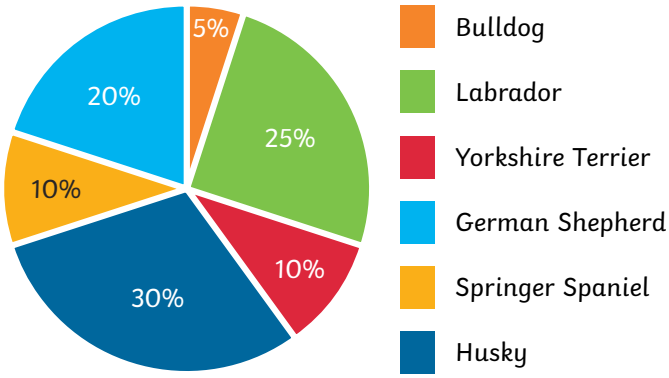
**b)** 140 children chose cola.

**c)** 13 children chose cream soda, 26 chose orangeade. The answer already states false.

**d)** 169 children in total chose either cherryade, cream soda or cola as their favourite drink.

**2)** 300 people were asked to choose their favourite breed of dog. This pie chart shows the results:

**Favourite Breeds of Dog**




**a)** How many people chose a labrador as their favourite breed of dog?

**b)** How many more people chose a husky than a springer spaniel?

**c)** How many people in total chose either a Yorkshire terrier, bulldog or German shepherd as their favourite breed of dog?

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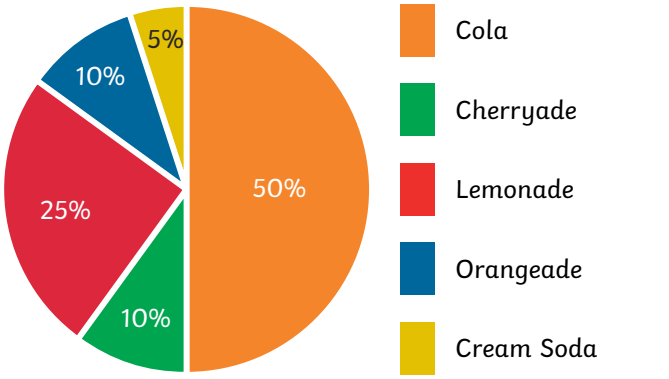


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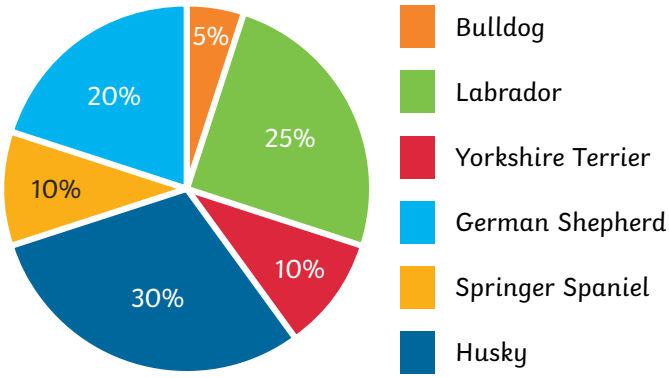


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**1)** 220 year 5 children and 180 year 6 children were asked what their favourite sandwich filling was. The results are shown in these pie charts:

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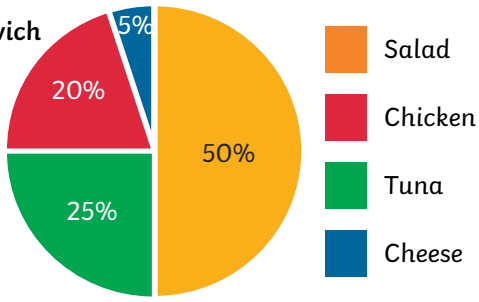
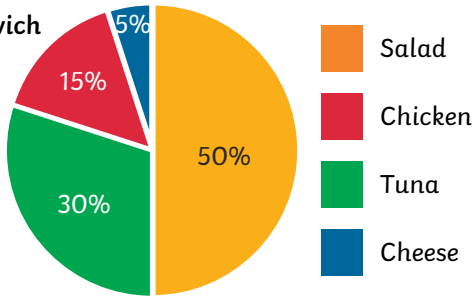



**Favourite Sandwich Filling in Year 6**




Explain whether or not you agree with each of these statements about the pie charts, giving reasons.

**a)** The same number of children in each year group chose cheese as their favourite sandwich filling.

**b)** More children in year 5 chose tuna than in year 6.

**c)** 15 more children chose orangeade than cream soda.

**d)** 18 more children chose chicken in year 5 than year 6.

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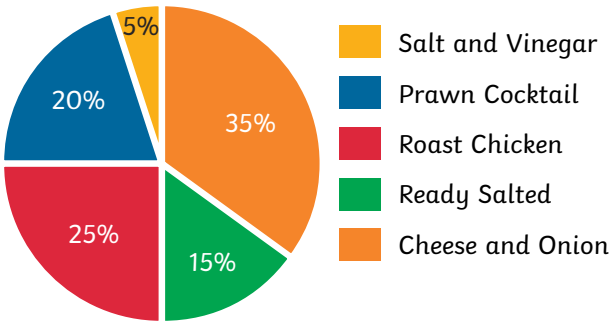


**a)** Olivia knows that 25% of people chose roast chicken. She thinks that, as 200 ÷ 25 = 8, eight people chose roast chicken.

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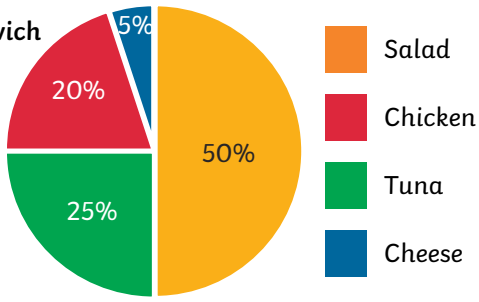


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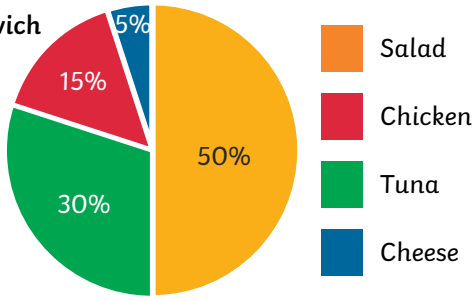


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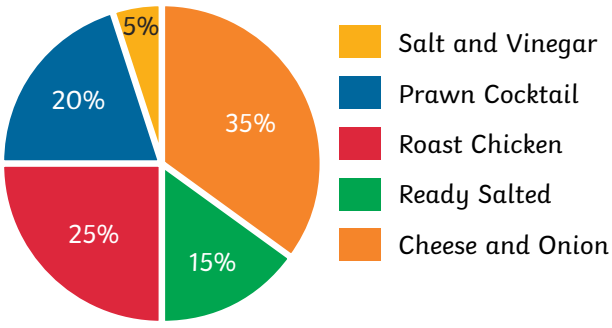


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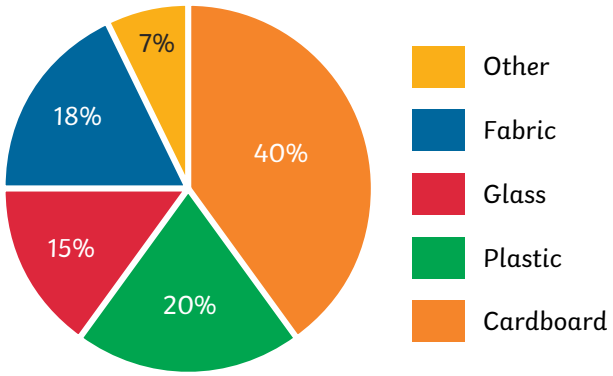


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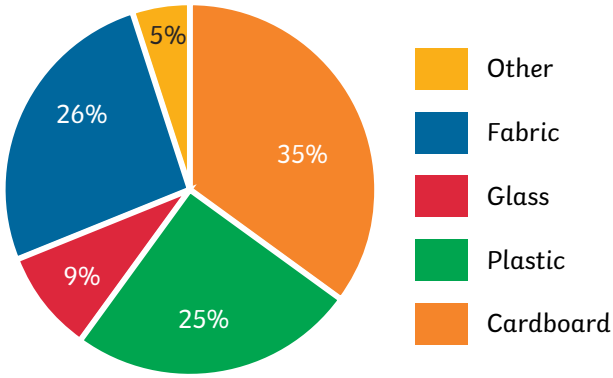


**1)** If 200 tonnes of recycling in 2018 was 'other' materials, how many tonnes of recycling were collected in total that year?

**2)** If 3000 tonnes of recycling was collected in total during 2017, calculate the quantities collected of the following materials:

**a)** cardboard **d)** fabric

**b)** plastic **e)** other

**c)** glass

**3)** Compare the two pie charts to answer the following questions.

**a)** In which year was the larger quantity of cardboard collected? By how many tonnes was it larger?

**b)** In which year was the larger quantity of glass collected? By how many tonnes was it larger?

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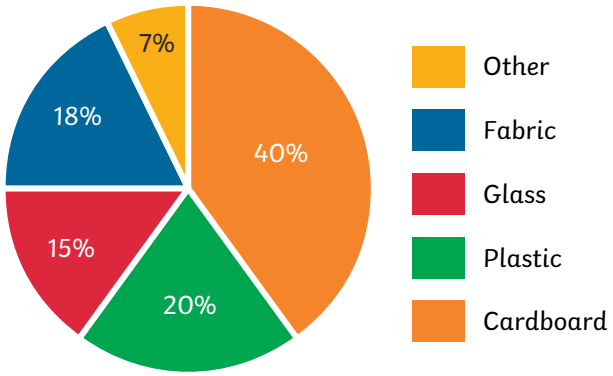


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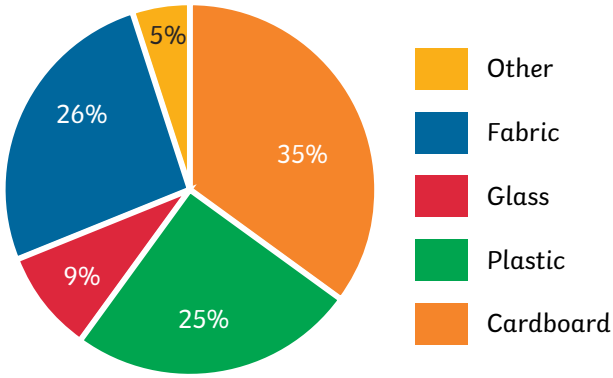


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